

Please add new claims 37, 38, and 39

37. A calibration medium for an optical instrument, which optical instrument has a spectral light source, said light source capable of emitting light in the far UV range which light travels along a light path and which light comprises at least one wavelength, means for receiving sample within said light path, and a sensor assembly for receiving light and producing a signal, said sensor assembly producing a signal upon receiving light having said wavelength; comprising:

a sol-gel glass monolith, said sol-gel glass monolith capable of assuming a position within said light path, said sol-gel glass monolith having a rare-earth dopant therein said constituents of the sol-gel glass monolith constituents comprising selected so the rare-earth doped sol-gel glass monolith exhibits a transmittance in the far UV range so at least one spectral feature of the rare-earth dopant in the far UV range is discernable and corresponds to a control value to allow the sensor assembly receiving light having a wavelength corresponding to the control value to be calibrated.

38. A method for calibrating an optical instrument which optical instrument has a spectral light source, said light source capable of emitting light in the far UV range which light travels along a light path and which light comprises at least one wavelength, means for receiving sample within said light path, and a sensor assembly for receiving light and producing a signal, said sensor assembly producing a signal upon receiving light having said wavelength, the calibration method comprising the steps of:

disposing a calibration medium so as to be in said light path between the light source and the sensor assembly said light source emitting light in the UV spectral range, said calibration medium including a sol-gel glass monolith for receiving and transmitting light along said light path, said sol-gel glass monolith having constituents comprising a rare-earth dopant therein; said constituents of the sol-gel glass monolith selected so the rare-earth doped sol-gel glass monolith exhibits a transmittance in the far UV range so at least one spectral feature of the rare-earth dopant in the far UV range is discernable and corresponds to a wavelength comprising a control value to allow the signal of said sensor assembly receiving light having said wavelength corresponding to said control value to be compared to a standard for determining the calibration of said optical instrument;

sensing the light passing through the calibration medium with said sensor assembly to produce a signal; and,

comparing the signal to at least one other signal to determine the calibration of said optical instrument.

39. An optical instrument comprising:

a spectral light source, said light source capable of emitting light in the far UV range which light travels along a light path and which light comprises at least one wavelength;

means for receiving a sample within said light path;

a sensor assembly for receiving light and producing a signal, said sensor assembly producing a signal upon receiving light having said wavelength, :

a calibration medium capable of assuming a position in said light path between the light source and the sensor assembly, said calibration medium including a sol-gel glass monolith for receiving and transmitting light, said sol-gel glass monolith having